

## **REMARKS**

Claims 60-78 are currently pending in this application. All claims are rejected. No claims are amended.

### **Rejections under 35 U.S.C. § 103(a)**

#### **Harada in view of Decher**

Claims 60, 61, 63, 64, 66-68, 70, 71, and 73-76 are rejected under 35 U.S.C. § 103(a) as unpatentable over Harada (Science, 283, 65-67, 1999) in view of Decher (Science, 277, 1232-1237, 1997). *See* Office Action at 4.

The present invention is generally directed to processes for modifying or treating the surface of a device by coating the surface with a complex coacervate core micelle composition comprising a block copolymer to render said surface protein-resistant.

According to the Office Action, Harada teaches that molecular recognition based on length was found to occur between oppositely charged pairs of flexible and randomly coiled block copolymers in an aqueous milieu and that these assemblies of the charged segments form larger core-shell-type supramolecular assemblies. *See* Office Action 4. Moreover, according to the Office Action, the block copolymers taught by Harada were composed of oppositely charged pairs of poly(ethylene glycol)-b-poly( $\alpha,\beta$ -aspartic acid) and poly(ethylene glycol)-b-poly(L-lysine) *See* Office Action 5. Nevertheless, the Office Action recognizes that Harada does not teach coating a surface with the oppositely charged polymeric micelle structures and relies on the teaching of Decher to cure this deficiency. *See* Office Action at 7.

According to the Office Action, Decher teaches multilayer structures fabricated as shown in Fig. 1 of Decher. *See* Office Action at p. 7-9. The Office Action notes that Harada cites

Decher, stating that, “[a]ssembly of charged block copolymers in aqueous medium may lead to the formation of similar higher ordered structures through precise recognition based on the chain lengths of charged segments, which may be useful for constructing self-assembled layers based on electrostatic interaction [Decher citation].” The Office Action concludes that, “[o]ne of ordinary skill in the art would have inferred from the teachings of Harada et al. above that the application delineated by Decher is equally applicable to the application of the PIC micelles of Harada et al.” Office Action at p. 7.

The Office Action states that it would have been obvious to one of ordinary skill in the art to apply the polymeric micelles of Harada on a device surface because Harada teaches that assembly of charged block copolymers in aqueous media may lead to the formation of similar higher ordered structures through precise recognition based on the chain lengths of charged segments, which may be useful for constructing self-assembled layers based on electrostatic interaction. *See* Office Action at 9. The Office Action continues that the skilled artisan would have been motivated to coat device surfaces with polymeric micelles having oppositely charged assembly because Decher teaches that layer-by-layer adsorption from solution is a general approach for the fabrication of multicomponent films on solid supports. *See* Office Action at 9-10.

Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art to combine the teachings of Harada and Decher as proposed by the Office Action.

Firstly, neither Harada nor Decher teaches “coating said surface with a composition comprising at least one polymeric micelle.” As acknowledged by the Office Action, Harada does not disclose coating a surface with its polymer compositions; moreover, Decher does not teach coating surfaces with polymeric micelles. Decher teaches stepwise deposition of polymers

onto a substrate to construct a layered polymer film. *See* Decher at Fig. 1. There is not a teaching that it would be desirable or even possible to perform the method of Decher with the micelle compositions of Harada. Therefore, Decher does not cure the deficiency of Harada because it does not disclose coating a surface with polymeric micelles.

Secondly, Applicants respectfully submit that the Office Action fails to establish any reason why one of ordinary skill in the art would combine the teaching of Harada and Decher as proposed in the Office Action. The reference in Harada to the teaching of Decher states that “[a]ssembly of charged block copolymers in aqueous media may lead to the formation of *similar higher ordered structures*...which may be useful for constructing self-assembled *layers* based on electrostatic interaction [Decher citation].” Harada at 67 (emphasis added). Applicants disagree with the Office Action that this teaching suggests that one of ordinary skill in the art would have “inferred...that the application delineated by Decher is equally applicable to the application of the PIC micelles of Harada et al.” This teaching of Harada merely references Decher as disclosing “similar higher ordered structures.” There is no suggestion that the micelles of Harada could be successfully used in the stepwise layer-forming process of Decher. Indeed, Decher does not even teach that its polyanion and polycation could be combined and then subsequently applied to the surface in a single step.

The Office Action states that, “[t]he skilled artisan would have been motivated to coat device surfaces with polymeric micelles having oppositely charged assembly because Decher teaches in its conclusion that layer-by-layer assembly by adsorption from solution is a general approach for the fabrication of multicomponent films on solid supports.” Office Action at 9-10 (emphasis in original). However, this general statement does not suggest that polymeric micelles (or the micelles of Harada) can be successfully used in the layer-by-layer

assembly method of Decher. Indeed, this statement says nothing about polymeric micelles at all. Therefore, Applicants respectfully submit that this teaching of Decher fails to provide any motivation to use the micelles taught by Harada in the process of Decher as asserted in the Office Action.

Finally, Applicants note that Decher does not disclose any properties of its coatings and thus does not disclose or suggest that its coatings could be used to modify surface properties of a substrate, especially its protein resistivity. To the contrary, Decher teaches incorporation of proteins into its multilayer films. *See* Decher at 1236, middle column. By teaching the compatibility of its polymeric films with proteins, Decher teaches away from coating surfaces to resist proteins as presently claimed.

For at least these reasons, Applicants respectfully submit that the Office Action fails to establish a *prima facie* case of obviousness and this rejection should be withdrawn.

**Harada in view of Decher in further view of Karymov**

Claims 62, 65, 69, 71, 72, 77 and 78 are rejected under 35 U.S.C. § 103(a) as unpatentable over Harada in view of Decher, in further view of Karymov. *See* Office Action at p. 11.

Applicants respectfully submit that Karymov does not remedy the deficiencies of Harada and Decher discussed above, and therefore withdrawal of this rejection is respectfully requested.

CONCLUSION

Applicants respectfully submit that all claims are in condition for allowance. If any issues remain, Applicants request, as appropriate, the courtesy of a phone call to their counsel below.

Respectfully submitted,

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